

From: Don Marickovich <dmarickovich@daa.com>
Sent: Tuesday, November 30, 2021 4:26 PM
To: Crystal Bazyk; hall.kristen@epa.gov
Cc: Randall Eads; John Paul Jones; Sam Hess; Wallace McCulloch; zac.mitchell@bristolva.org; Ernie Hoch; Anthony Tomlin; Cynthia Garrett; Hurst, Jeffrey (DEQ); Stacy Bowers; Willard, Erin; Wendy Karably
Subject: EMO - 21 1130 - Hall (EPA) - Bristol (Reg# 11184) - 11/30/2021 Status Report
Attachments: Bristol - Construction Bid Drawings 2.5-Sheet 3A - Proposed Layout.pdf

Ms. Hall and Ms. Bazyk,

In accordance with EPA’s letter, “Approval of Higher Operating Temperature Values of Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Facility” from August 2021, I am providing the November 30, 2021 status report on the existing wells, well drilling operations, and the expansion of the gas collection system.

Existing Well Temperatures

During August to November 2021, existing wells 39, 40, 46, and 47 were monitored periodically for temperature. Starting on October 21st the staff also began monitoring gas well 37 and gas well 35 on November 19th. Monitoring results are provided in the tables below. Temperatures marked as “ok” were below the 145-degree threshold. Since the last report in the middle of November, the temperatures of wells 37, 39, 40, 46 and 47 have remained relatively consistent. Gas well 35 has increased to 135-degrees on November 30th. Gas wells 46 and 47 remain well above 145-degrees.

Temperature Data (Fahrenheit)																									
Gas Well	August Monitoring Dates																								
	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	21	23	24	25	27	28	30	31
39	104.4	100.1	99.5	100.8	107.8	ok																			
37																									
40	156.5	165.8	165.7	170.5	172.6	171.5	172.5	176.3	173.1	175.2	183.8	178	175.5	177.6	176.5	163.8	162.9	94.8	84.6	69.1	72.1	70.4	72.2	96.5	86.3
46	183.2	184.7	181.3	182.3	183.4	184	184.9	170.3	168.6	179.8	186.7	178.6	172.6	170.1	183.8	183.4	181.5	183	167.1	178.2	181.7	148.6	168.1	172.6	170.8
47	194.3	196.5	196.9	197.3	196.4	194.8	195.6	195.9	195.1	195.7	195.9	197.5	197.2	196.5	194.2	194.7	194.3	194.8	193.3	193.1	193.4	190.5	178.7	178.6	180.3

Temperature Data (Fahrenheit)																									
Gas Well	September Monitoring Dates																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
39	ok	ok	ok	ok			ok	ok	ok	ok	ok		ok	ok	ok	ok				ok	ok	ok	ok	ok	
37																									
40	94.8	117.5	118.2	121.4			135.5	142.6	157.3	162.5	174.7		178.8	178.6	175.3	173.7				110.4	112.8	145.5	147.9	146.3	
46	145.9	175.3	176.9	177.5			187.7	188.6	187.5	187.2	184.8		183.6	181.3	178.3	180.7				181.2	181.7	182.3	181.9	182.4	
47	179.4	180.2	180.7	179.3			190.2	194.5	192.6	188.2	182.5		178.2	183.5	187.2	184.8				184.5	185.3	186.4	187.3	185.2	

Temperature Data (Fahrenheit)																									
Gas Well	September/October Monitoring Dates																								
	26	27	28	29	30	10/1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
39		ok	ok	ok	ok	ok			ok	ok	ok		ok			ok		ok	ok	ok	ok		ok	ok	120.5

37																									
40		152.5	154.7	151.5	157.2	162.4			161.4	158.9	159.4		158.1			160.2		159.9	161.6	161.1	161		160.8	158.8	157.7
46		182.7	180.3	179.5	180.2	184.3			184.9	183.2	183.7		180.2			182.5		181.4	182.1	183.4	181.4		175.2	171.3	161.1
47		189.4	188.3	187.2	186.9	187.2			187.3	188.5	188.7		186.9			187.3		186.8	188.4	187.1	186.9		186.9	187.1	186.3

Temperature Data (Fahrenheit)																									
Gas Well	October/November Monitoring Dates																								
	21	22	23	24	25	26	27	28	29	30	31	11/1	2	3	4	5	6	7	8	9	10	11	12	13	14
39	121.6	119.6	120.6		121.1	119.4	117.7	116.6	118.3	116		116	115	112	110	109	108		107	105	104	104	103	103	
37	147	144.6	145.8		146.3	146.8	146.3	145.9	144.8	146		146	145	145	144	146	146		147	145	146	146	145	146	
40	147.1	148.4	147.2		145.7	144.5	141.8	139.9	140.7	137		136	135	131	127	125	122		120	117	117	114	112	109	
46	166.8	182.1	182.7		183.4	184.9	184.4	184.7	183.4	183		183	180	180	182	183	183		183	182	182	179	178	177	
47	185.8	185.3	186.5		187.1	187.4	185.7	185.5	184.7	184		184	184	184	184	184	183		183	183	182	182	182	184	

Temperature Data (Fahrenheit)																									
Gas Well	November/December Monitoring Dates																								
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	12/1	2	3	4	5	6	7	8	9
35					112	110	110	121	117	111	132	128	128	121	123	135									
39	102	102	100	100	103	90	93	98	98	99	115	113	112	110	110	111									
37	145	144	144	143	141	145	144	141	140	139	154	141	144	149	148	145									
40	104	96	94	89	89	79	74	78	90	108	120	119	123	121	120	93									
46	177	179	180		181	182	189	190	188	190	186	187	183	181	180	179									
47	184	186	186		189	189	188	189	189	189	185	183	185	183	183	189									

New Gas Well Installation

Aptim was contracted to install new wells. Well drilling began September 10, 2021. Approximately one well per day was drilled and installed; with stoppages due to mechanical issues. A total of 17 wells had initially been planned to be installed. However, as the drilling proceeded, the City decided to install 4 additional wells; 66, 67, 68, and 32R for a total of 21. The as-built locations of all 21 wells are shown on the attached drawing.

Below is the summary of the gas wells installed (gas well layout is attached to this email):

Summary of Gas Well Installation							
Gas Well	September/October 2021						
	Date Installed	Design Depth (ft)	Actual Depth (ft)	Max. Waste Temp. (°F)	Decomposition	Water Content	Comments
49	10/4/2021	120	110	162	High	Wet	Hit Refusal
50	9/24/2021	120	96	151	High	Wet	Hit Refusal
51	9/21/2021	120	114	150	High	Wet	Hit Refusal
52	9/22/2021	120	108.7	149	High	Wet	Hit Refusal
53	9/15/2021	120	91	148	High	Wet	Hit Refusal

54	9/16/2021	120	91	169	High	Wet	Hit Refusal
55	9/29/2021	120	104	151	High	wet	Hit Refusal
56	9/25/2021	120	109	150	High	Wet	Hit Refusal
57	9/20/2021	120	103	148	High	Wet	Hit Refusal
58	9/27/2021	120	92	146	High	Wet	Hit Refusal
59	9/17/2021	120	72	147	High	Wet	Hit Refusal
60	9/30/2021	120	120	152	High	Wet	Design Depth
61	10/1/2021	120	105	175	High	Wet	Hit Refusal
62	10/13/2021	120	120	168	High	Wet	Design Depth
63	10/12/2021	117	110	141	High	Wet	Hit Refusal
64	10/2/2021	120	120	158	High	Wet	Design Depth
65	10/11/2021	120	100	142	High	Wet	Hit Refusal
66	10/7/2021	120	102	142	High	Wet	Hit Refusal
67	10/8/2021	120	100	156	High	Wet	Hit Refusal
68	10/15/2021	120	75	133	High	Wet	Hit Refusal
32R	10/14/2021	120	120	168	High	Dry	Design Depth

Drilling operations were completed on October 15th.

Gas Collection System Expansion

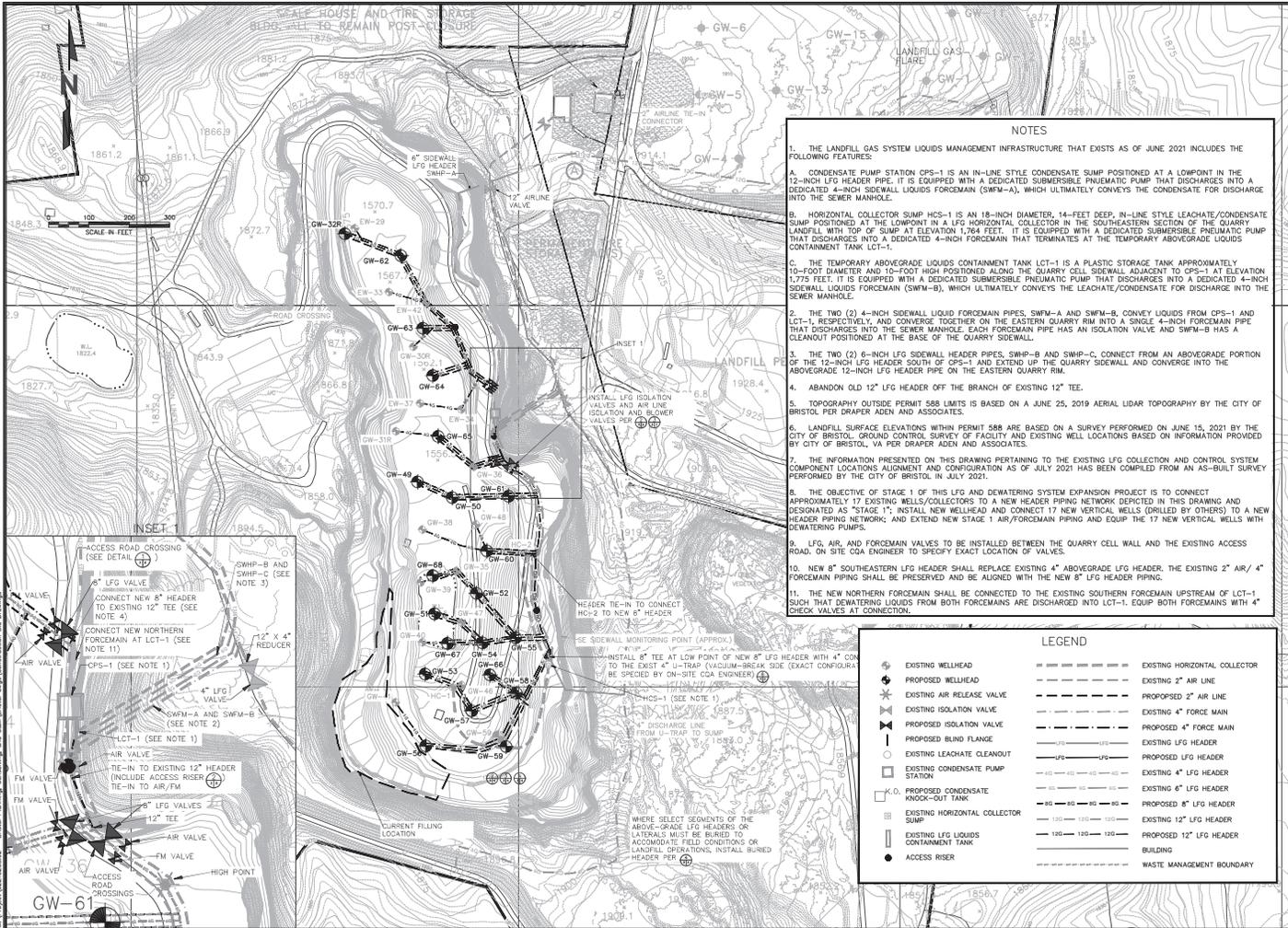
The City of Bristol VA has contracted with SCS Field Services to expand the gas collection system (GCS) to connect the 21 new gas wells. Construction began November 6th and is expected to take 40 days. As of November 29th, a total of eleven new gas wells have been connected to the GCS (32R, 49, 50, 53, 56, 59, 60, 61, 62, 63 and 64). The wellheads on these new wells have been opened about 10% pending proper tuning in the coming months. The landfill staff has conducted preliminary monitoring of these new wells and have so far found that gas well 64 is the only new well with temperatures above 145-degrees. The staff will continue to monitor the temperature of this well.

The next bi-weekly status report will be provided by December 15, 2021. If you have any questions on the information provided, please, contact either me or Mr. Ernest Hoch at (540) 537-0404 or via email at ehoch@daa.com.

Thank you,
Don Marickovich

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NOTES

- THE LANDFILL GAS SYSTEM LIQUIDS MANAGEMENT INFRASTRUCTURE THAT EXISTS AS OF JUNE 2021 INCLUDES THE FOLLOWING FEATURES:
 - CONDENSATE PUMP STATION CPS-1 IS AN IN-LINE STYLE CONDENSATE SUMP POSITIONED AT A LOWPOINT IN THE 12-INCH LFG HEADER PIPE. IT IS EQUIPPED WITH A DEDICATED SUBMERSIBLE PNEUMATIC PUMP THAT DISCHARGES INTO A DEDICATED 4-INCH SEWELL LIQUIDS FORCEMAIN (SWFM-A), WHICH ULTIMATELY CONVEYS THE CONDENSATE FOR DISCHARGE INTO THE SEWER MANHOLE.
 - HORIZONTAL COLLECTOR SUMP HCS-1 IS AN 18-INCH DIAMETER, 14-FOOT DEEP, IN-LINE STYLE LEACHATE/CONDENSATE SUMP POSITIONED AT THE LOWPOINT IN A LFG HORIZONTAL COLLECTOR IN THE SOUTHEASTERN SECTION OF THE QUARRY LANDFILL WITH TOP OF SUMP AT ELEVATION 1764 FEET. IT IS EQUIPPED WITH A DEDICATED SUBMERSIBLE PNEUMATIC PUMP THAT DISCHARGES INTO A DEDICATED 4-INCH FORCEMAIN THAT TERMINATES AT THE TEMPORARY ABOVEGRADE LIQUIDS CONTAINMENT TANK LCT-1.
 - THE TEMPORARY ABOVEGRADE LIQUIDS CONTAINMENT TANK LCT-1 IS A PLASTIC STORAGE TANK APPROXIMATELY 10-FOOT DIAMETER AND 10-FOOT HIGH POSITIONED ALONG THE QUARRY CELL SIDEWALL ADJACENT TO CPS-1 AT ELEVATION 1775 FEET. IT IS EQUIPPED WITH A DEDICATED SUBMERSIBLE PNEUMATIC PUMP THAT DISCHARGES INTO A DEDICATED 4-INCH SEWELL LIQUIDS FORCEMAIN (SWFM-B), WHICH ULTIMATELY CONVEYS THE LEACHATE/CONDENSATE FOR DISCHARGE INTO THE SEWER MANHOLE.
 - THE TWO (2) 4-INCH SIDEWALL LIQUID FORCEMAIN PIPES, SWFM-A AND SWFM-B, CONVEY LIQUIDS FROM CPS-1 AND LCT-1, RESPECTIVELY, AND CONVERGE TOGETHER ON THE EASTERN QUARRY RIM INTO A SINGLE 4-INCH FORCEMAIN PIPE THAT DISCHARGES INTO THE SEWER MANHOLE. EACH FORCEMAIN PIPE HAS AN ISOLATION VALVE AND SWFM-B HAS A CLEANOUT POSITIONED AT THE BASE OF THE QUARRY SIDEWALL.
 - THE TWO (2) 6-INCH LFG SIDEWALL HEADER PIPES, SWHP-B AND SWHP-C, CONNECT FROM AN ABOVEGRADE PORTION OF THE 12-INCH LFG HEADER SOUTH OF CPS-1 AND EXTEND UP THE QUARRY SIDEWALL AND CONVERGE INTO THE ABOVEGRADE 12-INCH LFG HEADER PIPE ON THE EASTERN QUARRY RIM.
 - ABANDON OLD 12" LFG HEADER OFF THE BRANCH OF EXISTING 12" TEE.
 - TOPOGRAPHY OUTSIDE PERMIT 588 LIMITS IS BASED ON A JUNE 25, 2019 AERIAL LIDAR TOPOGRAPHY BY THE CITY OF BRISTOL PER DRAPER ADEN AND ASSOCIATES.
 - LANDFILL SURFACE ELEVATIONS WITHIN PERMIT 588 ARE BASED ON A SURVEY PERFORMED ON JUNE 15, 2021 BY THE CITY OF BRISTOL, GROUND CONTROL SURVEY OF FACILITY AND EXISTING WELL LOCATIONS BASED ON INFORMATION PROVIDED BY CITY OF BRISTOL, VA PER DRAPER ADEN AND ASSOCIATES.
 - THE INFORMATION PRESENTED ON THIS DRAWING PERTAINING TO THE EXISTING LFG COLLECTION AND CONTROL SYSTEM COMPONENT LOCATIONS ALIGNMENT AND CONFIGURATION AS OF JULY 2021 HAS BEEN COMPILED FROM AN AS-BUILT SURVEY PERFORMED BY THE CITY OF BRISTOL IN JULY 2021.
 - THE OBJECTIVE OF STAGE 1 OF THIS LFG AND DEWATERING SYSTEM EXPANSION PROJECT IS TO CONNECT APPROXIMATELY 17 EXISTING WELLS/COLLECTORS TO A NEW HEADER PIPING NETWORK DEPICTED IN THIS DRAWING AND DESIGNATED AS "STAGE 1". INSTALL NEW WELLHEAD AND CONNECT 17 NEW VERTICAL WELLS (DRILLED BY OTHERS) TO A NEW HEADER PIPING NETWORK; AND EXTEND NEW STAGE 1 AIR/FORCEMAIN PIPING AND EQUIP THE 17 NEW VERTICAL WELLS WITH DEWATERING PUMPS.
 - LFG, AIR, AND FORCEMAIN VALVES TO BE INSTALLED BETWEEN THE QUARRY CELL WALL AND THE EXISTING ACCESS ROAD. ON SITE CCA ENGINEER TO SPECIFY EXACT LOCATION OF VALVES.
 - NEW 8" SOUTHEASTERN LFG HEADER SHALL REPLACE EXISTING 4" ABOVEGRADE LFG HEADER. THE EXISTING 2" AIR/ 4" FORCEMAIN PIPING SHALL BE PRESERVED AND BE ALIGNED WITH THE NEW 8" LFG HEADER PIPING.
 - THE NEW NORTHERN FORCEMAIN SHALL BE CONNECTED TO THE EXISTING SOUTHERN FORCEMAIN UPSTREAM OF LCT-1 SUCH THAT DEWATERING LIQUIDS FROM BOTH FORCEMANS ARE DISCHARGED INTO LCT-1. EQUIP BOTH FORCEMANS WITH 4" CHECK VALVES AT CONNECTION.

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CLIENT
 CITY OF BRISTOL INTEGRATED WASTE MANAGEMENT FACILITY
 2125 SHAKESVILLE RD

PROJECT TITLE
 LFG AND DEWATERING SYSTEM IMPROVEMENT DRAWING

DATE
 10/2021

SCALE
 1" = 100'

DRAWING NO.
 3A

REVISION

NO.	REVISION	DATE
1	ACCESS RISER	8/22/21

STAGE 2
 PROPOSED LFG SYSTEM LAYOUT

DATE
 10/2021

SCALE
 1" = 100'

DRAWING NO.
 3A